

**ABSTRACT**

Surface-patterned microgels are formed by treating polymer films like electron-beam photoresists, but without destroying or removing the patterned microgels from their substrate. Focused electron beams are used to create patterned microgels 5 on surfaces where the enhanced spatial resolution can be exploited to create gels with characteristic length scales relevant to cellular and sub-cellular processes. Varying the beam intensity allows control of the concentration of proteins that adhere to the resulting microgel. The process can be used to precisely locate the adhesive junction between cells and a substrate and to confine cell growth within defined areas.

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